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Expression of sulfated carbohydrate chain and core peptides of mucin detected by monoclonal antibodies in Barrett's esophagus and esophageal adenocarcinoma.

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Columnar epithelium-lined esophagus (Barrett's esophagus) is an acquired disorder associated with a high incidence of adenocarcinoma of the lower esophagus. Columnar epithelium resembling intestinal metaplasia (IM) is especially important, since it is considered to be a premalignant condition. The aim of this study was to define the sulfated carbohydrate chain of mucin and its core peptide profile in Barrett's esophagus (BE) and to compare it with the profile in Barrett's adenocarcinoma and lower esophageal adenocarcinoma. The sulfated carbohydrate chain was not expressed in 16 specimens of normal esophageal epithelium, but in BE, it was expressed in 50% (8/16) of the specimens. This chain was detected in 100% (7/7) of esophageal adenocarcinoma specimens, including four cases of Barrett's adenocarcinoma. These data suggest that the sulfated carbohydrate chain may be associated with malignant phenotype of the esophagus. MUC1 core peptide was positive in 87% (13/15) of BE specimens and in 29% (2/7) of the esophageal adenocarcinoma specimens. MUC2 core peptide was present in 57% (8/14) and 43% (3/7) of these specimens, respectively. These data suggest that Barrett's epithelium, which is similar to IM, but not normal esophageal epithelium, expresses the sulfated sugar chain which is known to be present in gastric IM and colonic mucosa. However, there was no significant correlation between the expression of the sulfated sugar chain and the expression of either mucin core peptide MUC1 or MUC2. Thus, this carbohydrate chain may be expressed on as yet unidentified core proteins, other than MUC1 or MUC2 core peptide, in BE and esophageal adenocarcinoma. Identification of these proteins may be very important in helping to detect premalignant status in BE.

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